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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/332,338 | 06/14/1999 | GUILLERMO J. ROZAS | TRANS11 | 2806 |

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EXAMINER

NGUYEN, DUSTIN

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2154

DATE MAILED: 04/24/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/332,338 | ROZAS ET AL. | |
| | Examiner | Art Unit | |
| | Dustin Nguyen | 2154 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1 – 36 are presented for examination.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-23, 30-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The following terms lack antecedent basis:

- | | | | |
|-----|---------------------------------------|---|-----------------------|
| I. | the reordered sequence | - | claims 1 and 13. |
| II. | the reordered sequence of instruction | - | claims 1, 13, and 22. |

4. Claims 4 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: Nothing in claims that they depend on mentioned the limitation of remembering and checking instructions.

Claim Rejections - 35 USC § 103

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5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-18, 22 and 23, are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeen et al. [US Patent No 5421022], in view of Cohn et al. [US Patent No 5901308].

7. As per claim 1, McKeen discloses the invention substantially as claimed including a method for causing scheduler software to produce code which executes rapidly including the steps of:

reordering a sequence of instructions to run as fast as possible even though the reordered sequence may generate an exception [col 4, lines 49-59; and col 5, lines 3-8],

raising an exception if the reordered sequence of instructions violates a scheduling constraint [col 2, lines 56-66].

McKeen does not disclose determining steps to be taken for correctly executing each set of instructions about which an exception is raised.

Cohn discloses determining steps to be taken for correctly executing each set of instructions about which an exception is raised [Abstract; and col 6, lines 3-23].

It would have been obvious to a person skill in the art at the time the invention was made to combine the teaching of McKeen and Cohn because Cohn's teaching would provide the necessary steps to correct any scheduling errors in order to prevent the program from corrupting.

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8. As per claim 2, McKeen discloses the step of raising an exception if the reordered sequence of instructions violates a scheduling constraint includes a step of detecting exceptions caused by reordered instructions in the reordered sequence [Abstract, lines 7-11].

9. As per claim 3, McKeen does not disclose the step of detecting exceptions caused by reordered instructions in the reordered sequence includes:

remembering an instruction which has been placed out of order in the sequence, and
checking instructions in the sequence with respect to which the remembered instruction has been reordered to determine if an incorrect result is produced by the sequence of instructions.

Cohn discloses

remembering an instruction which has been placed out of order in the sequence [col 7, lines 14-23], and

checking instructions in the sequence with respect to which the remembered instruction has been reordered to determine if an incorrect result is produced by the sequence of instructions [col 9, lines 35-37]; and .

It would have been obvious to a person skill in the art at the time the invention was made to combine the teaching of McKeen and Cohn because Cohn's teaching would allow program to fall back to its original status sequence to keep data integrity.

10. As per claim 4, it is rejected for similar reasons as stated in claim 3. Furthermore, McKeen discloses

storing a memory address accessed by the instruction [col 4, lines 1-33], and

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comparing the stored memory address with memory addresses accessed by instructions against which it is checked [col 3, lines 16-26; and col 10, lines 62-col 11, lines 6].

11. As per claim 5, McKeen discloses the memory address of the data accessed by the instruction is stored in a protection register [col 4, lines 60-col 5, lines 3].

12. As per claim 6, McKeen does not disclose step of remembering where all remembered instructions are held. Cohn discloses step of remembering where all remembered instructions are held [col 7, lines 55-63]. It would have been obvious to a person skill in the art at the time the invention was made to combine the teaching of McKeen and Cohn because Cohn's teaching would allow program to fall back to its original status sequence to keep data integrity.

13. As per claim 7, McKeen discloses it is probable that the reordered sequence will generate an exception [col 2, lines 56-66].

14. As per claim 8, McKeen discloses the step of raising an exception if the reordered sequence of instructions violates a scheduling constraint includes a step of detecting exceptions caused by reordered instructions in the reordered sequence [col 3, line 5-9].

15. As per claim 9, it is rejected for similar reasons as stated above in claim 3.

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16. As per claim 10, it is rejected for similar reasons as stated above in claim 4. Furthermore, Cohn discloses the process as claimed can be repeated for the reordered sequence of instruction [col 6, lines 24-50].

17. As per claim 11, it is rejected for similar reason as stated above in claim 5.

18. As per claim 12, it is rejected for similar reason as stated above in claim 6.

19. As per claims 13-18, they are apparatus claimed of claims 1-6, they are rejected for similar reasons as stated above in claims 1-6.

20. As per claim 22, it is rejected for similar reasons as above in claim 1.

21. As per claim 23, McKeen discloses handling said sequence of instructions sequentially, if said sequence of instructions has said dependency that will result in violation of any said scheduling constraints [col 5, lines 40-66].

22. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeen et al. [US Patent No 5421022], in view of Cohn et al. [US Patent No 5901308], and further in view of Cmelik et al. [US Patent No 6031992].

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23. As per claim 19, McKeen and Cohn do not disclose

means for storing indicators for the memory addresses accessed by identified instructions which exist during a sequence of instructions, and

means for storing indicators for the addresses accessed by identified instructions which persist beyond a sequence of instructions.

Cmelik discloses

means for storing indicators for the memory addresses accessed by identified instructions which exist during a sequence of instructions [working registers] [col 17, line 9-12], and

means for storing indicators for the addresses accessed by identified instructions which persist beyond a sequence of instructions [target registers] [col 12, line 67-col 13, line 8].

It would have been obvious to a person skill in the art at the time the invention was made to combine the teaching of McKeen, Cohn and Cmelik because Cmelik's teaching would allow program to fall back to its original status sequence to keep data integrity.

24. As per claim 20, McKeen and Cohn do not disclose the limitation of the claim.

Cmelik discloses

the means for storing indicators for the memory addresses accessed by identified instructions which exist during a sequence of instructions is a first register storing instructions of valid memory addresses accessed by identified instructions [head pointer] [Figure 5, item 51],

the means for storing indicators for the memory addresses accessed by identified instructions which persist a sequence of instructions is a second register storing indications of

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valid memory addresses accessed by identified instructions [gate pointer] [Figure 5, item 52],
and

further including a third register for storing indicators for the memory addresses accessed
by identified instructions [tail pointer] [Figure 5, item 53], and

means for transferring indications from the second register to the first and third registers
when a sequence of instructions is executed without an exception [commit] [col 17, line 54-65
], and

means for transferring indications from the third register to the first and second registers
when an exception is generated during a sequence of instructions being executed [rollback] [
col 18, line 8-19].

It would have been obvious to a person skill in the art at the time the invention was made
to combine the teaching of McKeen, Cohn and Cmelik because Cmelik's teaching would allow
program to fall back to its original status sequence to keep data integrity.

25. As per claim 21, McKeen and Cohn do not disclose the means for replicating memory
data in an execution unit register. Cmelik discloses the means for replicating memory data in an
execution unit register [col 23, line 30-35]. It would have been obvious to a person skill in the
art at the time the invention was made to combine the teaching of McKeen, Cohn and Cmelik
because Cmelik's teaching would allow program to fall back to its original status sequence to
keep data integrity.

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26. Claims 24-27, 30-33, and 36, are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeen et al. [US Patent No 5421022], in view of Bernstein et al. [US Patent No 5526499].

27. As per claim 24, McKeen discloses the invention substantially as claimed including a method for scheduling instructions comprising:

placing a sequence of instructions into one of a plurality of categories based on probability of dependencies [col 5, lines 9-32].

McKeen does not disclose

reordering said sequence of instructions based on which of said plurality of categories said sequence of instructions is placed.

Bernstein discloses

reordering said sequence of instructions based on which of said plurality of categories said sequence of instructions is placed [col 3, lines 11-col 4, lines 5].

It would have been obvious to a person skill in the art at the time the invention was made to combine the teaching of McKeen and Bernstein because Bernstein's teaching would allow multiple instructions to be executed possibly at the same time to increase the system performance.

28. As per claim 25, McKeen discloses if said sequence of instructions is placed into a category of said plurality of categories in which there are no dependencies [col 5, lines 12-14]. McKeen does not disclose reordering said sequence of instructions comprises reordering without

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regard to violating a scheduling constraint. Bernstein discloses reordering said sequence of instructions comprises reordering without regard to violating a scheduling constraint [col 3, lines 30-41]. It would have been obvious to a person skill in the art at the time the invention was made to combine the teaching of McKeen and Bernstein because Bernstein's teaching would allow multiple instructions to be executed possibly at the same time to increase the system performance.

29. As per claim 26, McKeen discloses if said sequence of instructions is placed into a category of said plurality of categories in which there are probably no dependencies [col 5, lines 14-15; Abstract]. McKeen does not disclose reordering said sequence of instructions comprises reordering without regard to violating a scheduling constraint. Bernstein discloses reordering said sequence of instructions comprises reordering without regard to violating a scheduling constraint [col 3, lines 30-41]. It would have been obvious to a person skill in the art at the time the invention was made to combine the teaching of McKeen and Bernstein because Bernstein's teaching would allow multiple instructions to be executed possibly at the same time to increase the system performance.

30. As per claim 27, McKeen discloses if said sequence of instructions is placed into a category of said plurality of categories in which there are probably dependencies [col 5, lines 14-15; Abstract]. McKeen does not disclose reordering said sequence of instructions comprises reordering without regard to violating a scheduling constraint. Bernstein discloses reordering said sequence of instructions comprises reordering without regard to violating a scheduling

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constraint [col 3, lines 30-41]. It would have been obvious to a person skill in the art at the time the invention was made to combine the teaching of McKeen and Bernstein because Bernstein's teaching would allow multiple instructions to be executed possibly at the same time to increase the system performance.

31. As per claims 30 and 31, they are rejected for similar reasons as stated above in claim 24.

32. As per claim 32, it is rejected for similar reason as stated above in claim 26.

33. As per claim 33, McKeen does not disclose plurality of categories comprise at least three separate categories. Bernstein discloses plurality of categories comprises at least three separate categories [col 4, lines 40-44]. It would have been obvious to a person skill in the art at the time the invention was made to combine the teaching of McKeen and Bernstein because Bernstein's teaching would allow multiple instructions to be executed possibly at the same time to increase the system performance.

34. As per claim 36, McKeen discloses determining an execution order between reordering said sequence of instructions and executing said sequence of instructions without reordering, if said sequence of instructions is placed in a category in which there probably are dependencies [col 5, lines 9-25].

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35. Claims 28, 29, 34 and 35, are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeen et al. [US Patent No 5421022], in view of Bernstein et al. [US Patent No 5526499], and further in view of Cohn et al. [US Patent No 5901308].

36. As per claim 28, McKeen discloses if said sequence of instructions is placed into a category of said plurality of categories in which there are probably dependencies [col 5, lines 14-15; Abstract]. McKeen and Bernstein do not disclose reordered of said sequence of instructions comprises keeping the original order. Cohn discloses reordered of said sequence of instructions comprises keeping the original order [col 10, lines 54-65]. It would have been obvious to a person skill in the art at the time the invention was made to combine the teaching of McKeen, Bernstein and Cohn because Cohn's teaching would allow program to fall back to its original status sequence to keep data integrity.

37. As per claim 29, it is rejected for similar reason as stated above in claim 28. Furthermore, McKeen discloses known dependencies [Abstract].

38. As per claims 34-35, they are rejected for similar reasons as stated above in claims 25-29.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dustin Nguyen whose telephone number is (703) 305-5321. The examiner can normally be reached on Monday – Friday (8:00 – 5:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703) 308-9678.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directly to the receptionist whose telephone number is (703) 305-3900.

Dustin Nguyen


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